

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**In re Application of:
Guell et al.

U.S. Serial No: 09/608,234

Filed: 6/30/2000

For: EXTERIOR AIRCRAFT VISION SYSTEM
USING A HELMET-MOUNTED DISPLAY/ Confirmation No. 9986
/
/ Examiner: Lun Yi Lao
/
/ Group Art: 2673
/ Customer No. 33197
/**Commissioner for Patents**
P.O. Box 1450
Alexandria, VA 22313-1450**CERTIFICATE OF MAILING (37 CFR 1.8a)**

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first-class mail in an envelope addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Signed:

Donald E. Stout, Reg. No. 34,493

Date:

TRANSMITTAL OF APPEAL BRIEF (PATENT APPLICATION -- 37 CFR 1.193)1. Transmittal herewith is the APPEAL BRIEF in this application with respect to the Notice of Appeal filed on **September 17, 2004**2. **STATUS OF APPLICANT***This application is on behalf of*☒ *other than a small entity*☐ *small entity*3. **FEE FOR FILING APPEAL BRIEF***Pursuant to 37 CFR 1.17(f) the fee for filing the Appeal Brief is:*☐ *small entity*

\$ 165.00

☒ *other than a small entity*

\$ 330.00

Appeal Brief fee due \$ 0.00**NO FEE IS DUE BECAUSE THE FEE FOR FILING THE APPEAL BRIEF WAS PREVIOUSLY PAID WHEN THE FIRST APPEAL BRIEF IN CONNECTION WITH THIS APPLICATION WAS FILED ON DECEMBER 15, 2003.**

4. EXTENSION OF TERM

NOTE: The time periods set forth in 37 CFR 1.92(a) are subject to the provision of § 1.136 for patent applications 37 CFR 1.191(d). Also see Notice of November 5, 1985 (1060 O.G. 27).

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply.

(complete (a) or (b) as applicable)

(a) ☐ Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

	<u>Extension (months)</u>	<u>Fee for other than small entity</u>	<u>Fee for small entity</u>
<input type="checkbox"/>	one month	\$110.00	\$55.00
<input type="checkbox"/>	two months	\$420.00	\$210.00
<input type="checkbox"/>	three months	\$950.00	\$475.00
<input type="checkbox"/>	four months	\$1480.00	\$740.00

If additional extension of time is required please consider this a petition therefor.

(check and complete the next item, if applicable)

☐ An extension for _____ months has already been secured and the fee paid therefor of \$ _____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ 0.00

or

(b) ☒ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

4. TOTAL FEE DUE

The total fee due is:

Appeal brief fee \$ 0.00

Extension fee (if any) \$ 0.00

TOTAL FEE DUE \$ 0.00

5. FEE PAYMENT

☐ Attached is a check equaling the sum of \$ _____

☐ Charge Account Number **13-5135** the sum of \$ _____

6. FEE DEFICIENCY

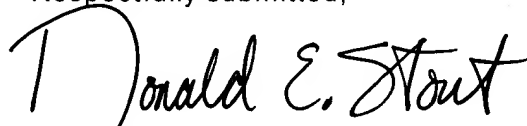
NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any deficiency should be checked. See Notice of April 7, 1986, 1065 O.G. 31-32.

☒ If any additional extension and/or fee is required, this is a request therefor and
to charge Account Number **13-5135**.

AND/OR

☒ If any additional fee for claims is required, charge Account Number **13-5135**.

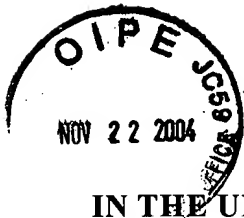
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Serial No: 09/608,234	/	Group Art Unit: 2673
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APPELLANT'S BRIEF (37 CFR §41.37)

Sir:

This brief is in furtherance of the Notice of Appeal filed in this case on September 17, 2004. A transmittal letter, including a Certificate of Mailing, accompanies this brief.

REAL PARTY IN INTEREST (37 CFR §41.37(c)(1)(i))

The assignee of record is the real party in interest.

RELATED APPEALS AND INTERFERENCES (37 CFR §41.37(c)(1)(ii))

There are no related appeals or interferences previously or currently pending.

STATUS OF CLAIMS (37 CFR §41.37(c)(1)(iii))

The application on appeal, as filed, contained 20 claims, of which claim 1 was independent. Claims 21-26 have been subsequently added by amendment, of which claim 22 was independent. Presently, claims 1-26 stand rejected, having been finally rejected (for the second time) on June 14, 2004. No claims stand allowed. Thus, the status of the claims is as follows:

canceled claims -- None

allowed claims -- None

claims objected to -- None

claims rejected -- 1-26

claims withdrawn -- None

The claims on appeal are Claims 1-26.

STATUS OF AMENDMENTS (37 CFR §41.37(c)(1)(iv))

An amendment was filed on March 20, 2003, which was entered. No other amendments have been filed or entered. The foregoing section listing the present status of the claims takes into account all amendments of record.

SUMMARY OF CLAIMED SUBJECT MATTER (37 CFR §41.37(c)(1)(v))

The subject matter of claim 1 comprises an enhanced vision system for mobile vehicles, particularly aircraft, which includes an array of vision sensors 32 fixedly mounted on the exterior of the vehicle 20, each sensor comprising a non-turret mounted immovable sensor being capable of generating image signals. As described in the specification, page 6, lines 17-30, a recording medium 64, such as a video recorder, is provided for storing image signals from the array of vision sensors. A processor 34, preferably an electronic imaging system, samples the stored image signals from the recording medium 64 and producing an output signal therefrom, to a helmet-mounted display 36, which is connected to receive the output signal from the processor and

superimpose it on a see-through visor, which also selectively permits an operator to view actual images disposed in front of the visor. A tracking system 38 monitors movement of the helmet-mounted display 36 and provides that information, by transmitting a tracking signal, to the imaging system 34. In this manner, real-time movements of the operator wearing the helmet-mounted display 36 causes the imaging system 34 to alter which imaging sensor 32, or combination of sensors, is sampled. This feedback loop thus permits the operator to scan across a number of images produced by the sensors 32 by simply turning his or her head.

Independent claim 22 is directed to an enhanced vision system for mobile vehicles, which comprises an array of vision sensors 20 immovably mounted on the exterior of a vehicle 22, wherein each sensor is capable of generating image signals. A processor 34 is provided for producing an output signal from a selected sampling of the image signals. A display 36 is connected to receive the output signal from the processor and superimpose it on a see-through screen which also selectively permits an operator to view actual images disposed in front of the screen. A controller 66 (Fig. 4) controls an intensity of light permitted to pass through the screen and for alternatively selectively disabling selected regions of the screen so that light cannot pass through those selected regions, as described in the specification at page 7, lines 1-17.

For the convenient reference of the Board, a copy of the claims on appeal is presented in Appendix A, and a copy of appealed claim 1, modified to include representative reference numerals, is presented in Appendix B.

***GROUND OF REJECTION TO BE REVIEWED ON APPEAL (37 CFR
§41.37(c)(1)(vi))***

1. Claims 1-3, 6-8, 10-14, 17, and 20-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hale et al. (Patent No. 5,317,394) in view of Ferguson (Patent No. 5,343,313).

2. Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over

Hale et al. '394 in view of Fergason '313 and Hale et al. (Patent No. 5,418,364).

3. Claims 4-5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313 and Myrick (Patent No. 5,166,789).

4. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313 and Muller (Patent No. 4,057,782).

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313, Myrick '789 and Kaneko (Patent No. 5,237,418).

6. Claims 22-24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313 and Okamura et al. (Patent No. 5,572,343).

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313, Okamura et al. '343 and Krouglicof et al. (Patent No. 4,649,504).

ARGUMENT (37 CFR §41.37(c)(1)(vii))

Issue 1 -- The Examiner rejected claims 1-3, 6-8, 10-14, 17, and 20-21 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313.

Appellant respectfully traverses the Examiner's rejection of the referenced claims. After much prosecution and a prior appeal brief, the Examiner at long last acknowledges that Hale et al. fails to teach the recited see-through visor which also selectively permits an operator to view actual images disposed in front of the visor. However, he now incorrectly supplements his prior rejection by asserting that the Fergason '313 patent supplies the missing teaching, and that it would have been obvious to apply the Fergason patent teachings to the Hale et al. device to arrive at the claimed invention.

The Fergason patent discloses a conventional heads-up display system which also

incorporates a feature providing short duration eye protection. This conventional heads-up display system permits the display of flight data or other information, such as "words, symbols, images, pictures, etc.", in the field of view of the pilot, while he is also "viewing something else, such as the scene or view outside of the airplane" (col. 1, lines 34-38). There is no disclosure in the Fergason patent to indicate that the disclosed heads-up display system is anything more than this conventional approach, since the focus of the patent is on the aforementioned short duration eye protection feature. This feature provides for the blockage of light through the pilot's visor when it is unsafe for the pilot's eyes. As discussed in col. 21, lines 28-65, the Fergason system provides that, in the event that the light blocking feature is activated, the computer 302 is operative to compute what the image of the real space which the pilot would otherwise see through his visor would be, and to display that image through the heads-up display system, by overriding the heads-up display electronics for a short period of time. It is important to note that this is not a conformal system, as disclosed and claimed by Appellants, wherein both the artificially generated and real images may be viewed together by the pilot through the visor, with the artificially generated image being displayed in conformity with the real image so that the effect is seamless to the pilot. Rather, the Fergason patent system alternately either permits the pilot to view the actual surroundings of the pilot through the visor, or blocks that view for the pilot's protection, and substitutes instead an artificially generated image which is sufficient to permit him to continue to pilot the aircraft, on an emergency basis, for a short period of time. Otherwise, when the ordinary heads-up display system is operating, controlled by electronics 251, simultaneously with the pilot having the ability to view the actual real world through his visor, there is no disclosure in Fergason that the information displayed by the heads-up display corresponds to the real world image, and is displayed to "conform" with it, as disclosed and claimed.

The Examiner continues to acknowledge that Hale et al. does not teach the usage of staring type sensors, as claimed, but rather, specifically teaches the usage of turret-mounted, movable sensors. However, the rejection asserts that it "...would have been obvious to have sensors (71-74) are (sic) non-turret mounted unmovable sensors since

Hale et al have disclosed a large number of staring sensors fixed to a host platform with maximal coverage with minimal moving parts, it would reduce cost and more reliable (see column 1, lines 65-68 and column 2, line 1)(sic) and movable sensors can be replaced by unmovable sensors (see column 2, lines 39-43)."

During the lengthy prosecution of this application, and in the prior appeal brief, Appellants have carefully, at length, explained why such a substitution would not have been obvious. Clearly, the passages referenced by the Examiner in Hale et al. teach away from using staring type sensors. These passages are in the background portion of the patent specification, and actually state that it has been suggested in the prior art that large parallel arrays of staring type sensors, rather than serial gimbaled sensor scanners, would be advantageous, but the patentees did not agree that they were. Rather, the passages noted by the Examiner actually state that such parallel fixed arrays have a number of problems, including a long processing time, platform motion which creates vibration problems, and increased complexity, requiring greater processor load and consequent greater cost (see col. 2, lines 5-30).

The Hale et al. patent, consequently, teaches that staring-type sensors are inappropriate for systems of the type disclosed. Adjustable (gimbaled) sensors, disposed on turrets, and adjusted by means of servo-motors, are utilized in order to permit the sensor to compensate for motion or vibration of the underlying platform (col. 3, lines 3-20 and 55-57, Figs. 4-7, col. 5, lines 45-65). Thus, the Examiner's rejection requires that the basic premise of the Hale et al. patent be destroyed, by replacing the adjustable servo-controlled sensors with fixed staring-type sensors, even though Hale et al. specifically teach away from doing that. Clearly, therefore, the rejection is improper. *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 230 U.S.P.Q. 416 (Fed. Cir. 1986), *Specialty Composites v. Cabot Corp.*, 6 U.S.P.Q.2d 1601 (Fed. Cir. 1988).

For the first time, in the second final office action mailed on June 14, 2004, eleven months after the foregoing argument was first made, the Examiner at long last made an attempt to address its merits. He states, on page 8 of the final office action, that he disagrees that the Hale et al. patent teaches away from the usage of staring-type sensors because "Hale et al. point out the tracking system can be either used staring (sic) sensors

or movable sensors (see column 2, lines 39-43) and the staring sensors are distributed to obtain maximal coverage with minimal moving parts and it would reduce cost by eliminating moving parts and more reliable (sic)(see column 1, lines 65-68 and column 2, line 1)." This is the same point which is made in the rejection itself. While true, the fact remains that the Hale et al. patent specifically teaches away from using staring type sensors in the Hale et al. systems, so the fact that Hale et al. acknowledges their usage in the past is not particularly relevant. The Examiner recognizes the difficulty of his position on this point, and asserts a completely unsupported position to justify it: "Even though Hale et al. point out some disadvantage of using staring type sensors, Hale et al. do not mention that staring sensors can not be used in the system of Hale et al. have disclosed (sic)."

This last point is difficult to understand, but the Examiner is apparently asserting that it would have been obvious to modify the Hale et al device to utilize staring type sensors, rather than the preferred gimbaled, movable sensors, because Hale et al. discloses that they are known in the prior art, and were previously thought to be desirable, and, though Hale et al. now asserts that they have disadvantages and are not desirable, the patent does not specifically "mention that staring sensors can not be used in the system of Hale et al."

The notion that the lack of a specific teaching in a reference that a certain type of sensor cannot be used in an apparatus of the type claimed is equivalent to a teaching that would have led one skilled in the art to be motivated to employ that type of sensor in said apparatus is nonsense, and does not require any further refutation. It is nonsense on its face under U.S. patent law principles.

More particularly now, with reference to the claims, independent claim 1 recites that each of the claimed vision sensors are non- turret mounted immovable sensors. In contrast, as noted above, the Hale et al. patent discloses sensors 1-4, which, as shown in Fig. 4 thereof, are disposed in movable fashion on the vehicle. Servo motor 60 is disclosed as permitting "major changes in the position of the detector 1" (col. 5, lines 60-65). Additionally, the claim recites that the system, which superimposes the output signal on the visor, also selectively permits an operator to view actual images disposed in

front of said visor. The system at issue is a "conformal" system, meaning, as described at length above, that the system is conformal to the outside world, and the superimposed image matches 1 to 1 with the outside world view. On the other hand, even if the teachings of Ferguson would have been obviously applied to the system of Hale et al. '394, the resultant system would not be a conformal system, as required by the claim language.

Thus, claim 1 is clearly patentable over the Hale et al. '394 patent in view of Ferguson, together with all of the dependent claims 2-21. For the reasons noted above, it would not have been obvious to substitute staring-type sensors for the turret-mounted sensors of Hale et al., because such a substitution would destroy the premise of the Hale et al. invention.

For all of the foregoing reasons, the rejection of claims 1-3, 6-8, 10-14, 17, and 20-21 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Ferguson '313 is clearly improper, and should be reversed.

Issue 2 -- The Examiner rejected claim 9 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Ferguson '313 and Hale et al. '364. For the reasons discussed above, with respect to Issue 1, this rejection cannot stand, since claim 1 is patentable over the Hale et al. '394 Patent in view of Ferguson '313. Hale et al. '364 does not disclose or suggest the deficiencies of Hale et al. '394 and Ferguson '313 relative to claim 1, and claim 9 is dependent upon claim 1.

For all of the foregoing reasons, the rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Ferguson '313 and Hale et al. '364 is clearly improper, and should be reversed.

Issue 3 -- The Examiner rejected claims 4-5 and 15 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Ferguson '313 and Myrick '789. For the reasons discussed above, with respect to Issue 1, this rejection cannot stand, since claim 1 is patentable over Hale et al. '394 and Ferguson '313. Myrick '789 does not disclose or suggest the deficiencies of Hale et al. '394 and Ferguson '313 relative to

claim 1, and claims 4-5 and 15 are dependent upon claim 1.

For all of the foregoing reasons, the rejection of claims 4-5 and 15 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313 and Myrick '789 is clearly improper, and should be reversed.

Issue 4 -- The Examiner rejected claims 18 and 19 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313 and Muller '782. For the reasons discussed above, with respect to Issue 1, this rejection cannot stand, since claim 1 is patentable over Hale et al. '394 and Fergason '313. Muller '782 does not disclose or suggest the deficiencies of Hale et al. '394 and Fergason '313 relative to claim 1, and claims 18-19 are dependent upon claim 1.

For all of the foregoing reasons, the rejection of claims 18 and 19 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313 and Muller '782 is clearly improper, and should be reversed.

Issue 5 -- The Examiner rejected claim 16 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313, Myrick '789 and Kaneko '418. For the reasons discussed above, with respect to Issue 1, this rejection cannot stand, since claim 1 is patentable over Hale et al. '394 and Fergason '313. Neither Myrick '789 nor Kaneko '418 disclose or suggest the deficiencies of Hale et al. '394 and Fergason '313 relative to claim 1, and claim 16 is dependent upon claim 1.

For all of the foregoing reasons, the rejection of claim 16 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313, Myrick '789 and Kaneko '418 is clearly improper, and should be reversed.

Issue 6 -- The Examiner rejected claims 22-24 and 26 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Fergason '313 and Okamura et al. '343. However, independent claim 22 is similar, in many respects, to patentable claim 1, in that immovable vision sensors are recited, together with the capability of viewing, together, actual and superimposed images on the display screen. Neither Hale et al. '394

nor Ferguson '313 disclose or suggest these important claim features. Also, the claim recites a controller which permits varying levels of intensity of light to be transmitted through the screen or for alternatively selectively disabling selected regions of the screen so that light cannot pass through those selected regions. The Examiner admits that Hale et al. '394 does not disclose such a controller, but suggests that the Okamura et al. patent discloses such a controller, and that it "would have been obvious to have modified Hale et al. with the teaching of Okamura et al., so an operator could both view outside image and the electronic image". This rationale is fatally flawed, because Hale et al. '394, for reasons discussed above in connection with Issue 1, does not disclose a system wherein the operator can view both outside image and the electronic image simultaneously. Thus, there would have been no motivation for applying the teachings of Okamura et al. to the Hale et al. system, as modified by Ferguson, as suggested by the Examiner. Furthermore, even if such a combination were made, the combined references still would not have disclosed or suggested a system having staring-type (immovable) sensors, as recited in claim 22.

Since claims 23-24 and 26 depend upon claim 22, these claims are patentable as well.

For all of the foregoing reasons, the rejection of claims 22-24 and 26 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Ferguson '313 and Okamura et al. '343 is clearly improper, and should be reversed.

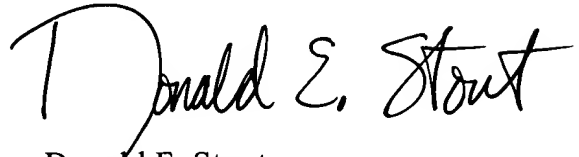
Issue 7 -- The Examiner rejected claim 25 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Ferguson '313, Okamura et al. '343 and Krouglicof et al. For the reasons discussed above, with respect to Issues 1 and 6, this rejection cannot stand, since claim 22 is patentable over the Hale et al. '394 Patent, in view of Ferguson '313 and Okamura et al. '343, and Krouglicof et al. does not disclose or suggest the deficiencies of Hale et al. '394, Ferguson '313, and Okamura et al. '343 relative to claim 22, and claim 25 is dependent upon claim 22.

For all of the foregoing reasons, the rejection of claim 25 under 35 U.S.C. 103(a) as being unpatentable over Hale et al. '394 in view of Ferguson '313, Okamura et al. '343

and Krouglicof et al. is clearly improper, and should be reversed.

Therefore, Appellant respectfully submits that the rejections of record of all
appealed claims 1-26 are improper, and should be reversed.

Respectfully submitted,

A handwritten signature in black ink that reads "Donald E. Stout". The signature is written in a cursive style with a large, looped initial "D".

Donald E. Stout
Attorney for Appellant
Reg. No. 34,493

November 17, 2004
Irvine, CA 92618
949-450-1750

APPENDIX A (37 CFR 1.192 (c)(7))

The text of the claims on appeal are:

1. An enhanced vision system for mobile vehicles, comprising:
an array of vision sensors fixedly mounted on the exterior of a vehicle, each sensor comprising a non-turret mounted immovable sensor and being capable of generating image signals;
a recording medium for storing the image signals from the array of vision sensors;
a processor for sampling the stored image signals from the recording medium and producing an output signal therefrom;
a display connected to receive the output signal from the processor and superimpose it on a see-through visor which also selectively permits an operator to view actual images disposed in front of said visor; and
a tracking system associated with the display that monitors the movement of the head of the operator and transmits a tracking signal to the processor, the processor producing the output signal based on feedback from the tracking signal.
2. The system of claim 1, wherein the vehicle is an aircraft, and wherein the array of vision sensors is mounted close to the cockpit area such that the image signals originate from a location proximate the wearer of the display.
3. The system of claim 2, wherein the array of vision sensors is mounted in the upper radome area of the nose of the aircraft.
4. The system of claim 1, wherein the vision sensors are infrared sensors, and

wherein one of the infrared sensors has higher resolution than the others and is forward-looking.

5. The system of claim 4, wherein the higher resolution infrared sensor is located in the center of the array of vision sensors.

6. The system of claim 1, wherein the vehicle is an aircraft, and wherein the array of vision sensors is mounted in the nose area and has a downwardly-looking elevational field-of-view.

7. The system of claim 6, wherein the array of vision sensors has an elevational field-of-view of approximately 24°.

8. The system of claim 1, wherein the vehicle is an aircraft, and wherein the array of vision sensors is mounted in the nose area and has a field-of-view straddling the horizontal horizon.

9. The system of claim 8, wherein the array of vision sensors has an elevational field-of-view of approximately 51°.

10. The system of claim 1, wherein the array of vision sensors provides at least a hemispherical field-of-view.

11. The system of claim 10, wherein the array vision sensors provides a

spherical field-of-view.

12. The system of claim 1, wherein at least one of the vision sensors additionally provides an infrared search and track function.

13. The system of claim 1, further including at least one other sensor separate from the array of vision sensors that provides a separate signal to the processor that then combines it with the output signal.

14. The system of claim 13, wherein the one other sensor is a vision sensor oriented differently than the array of vision sensors.

15. The system of claim 14, wherein the array of vision sensors is forward-looking, and wherein the one other vision sensor is rearward-looking.

16. The system of claim 14, wherein the array of vision sensors provide a series of adjacent image signals that are combined by the processor into a wide field-of-view output signal, and wherein the signal from the one other vision sensor is overlaid on the wide field-of-view output signal as a picture-in-picture image.

17. The system of claim 13, wherein the one other sensor generates a real-time map signal that is combined by the processor into the output signal and displayed on the display outside an image produced by the array of vision sensors.

18. The system of claim 13, wherein the one other sensor monitors an operational parameter of the vehicle and generates a corresponding signal.

19. The system of claim 18, wherein the operational parameter of the vehicle is selected from the group consisting of:

speed;
altitude;
attitude; and
engine status.

20. The system of claim 1, and further including a manual input device to the processor, wherein the output signal may be manually disabled in select areas on the helmet-mounted display.

21. The system of claim 1, wherein said display comprises a helmet-mounted display.

22. An enhanced vision system for mobile vehicles, comprising:
an array of vision sensors immovably mounted on the exterior of a vehicle, each sensor being capable of generating image signals;
a processor for producing an output signal from a selected sampling of said image signals;
a display connected to receive the output signal from the processor and

superimpose it on a see-through screen which also selectively permits an operator to view actual images disposed in front of said screen; and

a controller for controlling an intensity of light permitted to pass through said screen and for alternatively selectively disabling selected regions of said screen so that light cannot pass through those selected regions.

23. The system of claim 22, wherein said display comprises a helmet-mounted display, and said screen comprises a helmet visor.

24. The system of claim 23, and further comprising a tracking system associated with the helmet-mounted display that monitors the movement of the head of the wearer of the display and transmits a tracking signal to the processor, the processor producing the output signal based on feedback from the tracking signal.

25. The system of claim 24, wherein said tracking system comprises an emitter fixedly mounted on a helmet of the operator and a detector disposed in spaced relation to said emitter.

26. The system of claim 22, wherein said controller includes a manual override capability so that the operator can selectively manually control and select particular output images from various ones of said sensors.

APPENDIX B

For convenience, a copy of representative claim 1 on appeal, including reference numerals drawn from the figures, is presented below. It is to be understood, however, that this presentation is solely for the convenience of the members of the Board of Appeals, as suggested in the *Notice of May 3, 1988* (1092 O.G. 26-35), and that the claims are not to be limited thereby, but rather to be construed solely in light of the disclosure. Furthermore, the reference numerals are merely representative, in that the numerals from other various embodiments could be substituted in their stead.

1. An enhanced vision system for mobile vehicles (20), comprising:
 - an array of vision sensors (32) fixedly mounted on the exterior of a vehicle (20), each sensor comprising a non-turret mounted immovable sensor and being capable of generating image signals;
 - a recording medium (64) for storing the image signals from the array of vision sensors;
 - a processor (34) for sampling the stored image signals from the recording medium and producing an output signal therefrom;
 - a display (36) connected to receive the output signal from the processor and superimpose it on a see-through visor which also selectively permits an operator to view actual images disposed in front of said visor; and
 - a tracking system (38) associated with the display that monitors the movement of the head of the operator and transmits a tracking signal to the processor, the processor producing the output signal based on feedback from the tracking signal.